Geological and Mineralogical Features of Choghart Iron Deposit, Central Iran

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The Bafq area in Central Iran is an important mining district and hosts several iron deposit (about 200 million tons). One of the best examples in the region is the Choghart deposit. The deposit is located 125 km southeast of Yazd City and in 12 km northeast of Bafq City, Central Iran. The deposit has proven resources of 200 million tons with more than 60 % Fe on average. This district is restricted by two main strike-slip faults of Kubanan to the east and Posht e Bdam (Kuh e Daviran) to the west. The highly mineralized infracambrian (Late Precambrian) rocks are a thick sequence of metamorphosed rhyolite, tuff, alkali granite, syenite, magnetitite, dolomite, gypsum, limestone, black shale and sandstone. The infracambrian sequence is overlain unconformably by younger formations. The igneous rocks are tholeiitic, calc-alkaline and alkaline in magmatic series and bimodal. The bimodal nature of the volcanism in the area interpreted as a signature of extensional tectonic setting such as arc/back-arc basin complexes. On the other hand, black shale and thick sequence of limestone and dolomite are similar as those of formed in intracontinental and passive continental margins. The hosted rocks are two types: 1-green and pink rocks consist of diopside, actinolite, calcite and albite and K-feldspar 2: rhyolitic tuff. The Choghart deposit occurs as an massive lens, is a typical magnetite-apatite ore of Kiruna type. The host rocks have been affected by strong actinolite-albite alteration. REE and thorium were enriched in the system especially in surrounding rocks associated with albite-actinolite veins. Most of REE and thorium mineralization at the area have been formed by hydrothermal solutions which are thought to be genetically associated with alkaline magmatism.